

**TAG 3.3 Investigate**  
**What Is the Effect of Mass on the Acceleration of a Propeller Car?**

Name \_\_\_\_\_  
Hour \_\_\_\_\_ Date \_\_\_\_\_

Read the top of p. 167. Write the question you are going to investigate on the top of the "My Experiment: Procedure" page.



**Acceleration and Speed**

Read the box on the bottom of p. 168.

Assuming that something is traveling in a straight line, what is acceleration?

What is the difference between a fast acceleration and a fast velocity?

Read the box on p. 169.

What kind of graph can we study when we are talking about acceleration?

X-axis:

Y-axis:

What does a horizontal line mean on this graph?

What does a diagonal line mean on this graph?

Read the box on p. 170.

What does a curved line mean on a Time vs. Speed graph?

Discuss the pictures of Propeller Car A and Propeller Car B at the bottom of p. 170 with the class.

Read the box on the top of p. 171.

Why can't we directly measure acceleration?

How can we compare the acceleration of two objects, if we can't directly measure acceleration?

What is one indicator we can use to measure acceleration indirectly?

**Plan & Communicate**

Read the bottom of p. 167 and the top section of p. 168. Answer the following questions with your group:

What will you measure?

What reference points and frames of reference will you use for your measurements?

How will you measure accurately/what tools and units will you use?

What steps need to be included in the procedure?

How can you be sure your ideas make this a fair test?



Discuss your answers with the class.

### Using Time to Measure Differences in Acceleration

Read this box on p. 173. What formula shows the relationship between velocity and acceleration?

### Design Your Experiment

Read through the instructions on p. 173 and 174. With the class, create a common procedure that you will use to observe the acceleration of your propeller cars. Record your procedure on the “My Experiment: Procedure” page.

Step	
1	
2	
3	
4	
5	
6	
7	

**Conduct Your Experiment**

Do your procedure, recording your results on the “My Experiment: Results” page under “Data.”

**Analyze Your Results**

Read this paragraph at the top of p. 175. Record the trend you observed and a claim you can make on the “My Experiment: Results” page.

**Explain**

Complete a “Create Your Explanation” page supporting your claim. Your data from this experiment is your evidence, and your science knowledge should include a force diagram supporting your claim. Your final statement should tie together your claim, evidence, and science knowledge.

**Communicate**

Follow your teacher’s instructions to share your results and explanation with the class.

**What’s the Point?**

Write a statement that explains the relationship between force, mass, and acceleration.